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Published:

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29 November 2001

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: NOVEL METHOD FOR DOWN-REGULATION OF AMYLOID

(57) Abstract: Disclosed are novel methods for combatting diseases characterized by deposition of amyloid. The methods generally rely on immunization against amyloidogenic proteins (proteins contributing to formation of amyloid) such as beta amyloid (A β). Immunization is preferably effected by administration of analogues of autologous amyloidogenic polypeptides, said analogues being capable of inducing antibody production against the autologous amyloidogenic polypeptides. Especially preferred as an immunogen is autologous A β which has been modified by introduction of one single or a few foreign, immunodominant and promiscuous T-cell epitopes while substantially preserving the majority of A β 's B-cell epitopes. Also disclosed are nucleic acid vaccination against amyloidogenic polypeptides and vaccination using live vaccines as well as methods and means useful for the vaccination. Such methods and means include methods for identification of useful immunogenic analogues of the amyloidogenic proteins, methods for the preparation of analogues and pharmaceutical formulations, as well as nucleic acid fragments, vectors, transformed cells, polypeptides and pharmaceutical formulations.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/DK 01/00113

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: A61K 38/17, A61K 39/00, C07K 14/435, C07K 19/00
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: A61K, C07K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-INTERNAL, WPI DATA, PAJ, BIOSIS, CHEM.ABS.DATA, EMBASE, MEDLINE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 9927944 A1 (ATHENA NEUROSCIENCES, INC.), 10 June 1999 (10.06.99), page 3, line 1 - page 7, line 9, abstract --	1-58
A	WO 9523166 A1 (DEAKIN RESEARCH LIMITED), 31 August 1995 (31.08.95), page 6, line 1 - line 35, abstract --	3-29,52
A	WO 9505849 A1 (MOURITSEN & ELSNER A/S), 2 March 1995 (02.03.95), claims 1-2, abstract -- -----	3-29,52

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance
 "E" earlier application or patent but published on or after the international filing date
 "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
 "O" document referring to an oral disclosure, use, exhibition or other means
 "P" document published prior to the international filing date but later than the priority date claimed

"I" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

20 July 2001

Date of mailing of the international search report

14 08. 2001

Name and mailing address of the ISA/
European Patent Office

Authorized officer

Patrick Andersson/MP

Facsimile No.

Telephone No.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/DK01/00113

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: **1-34, 47**
because they relate to subject matter not required to be searched by this Authority, namely:
See extra sheet
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/DK01/00113

Claims 1-34,47 relate to methods of treatment of the human or animal body by surgery or by therapy/ diagnostic methods practised on the human or animal body/Rule 39.1.(iv). Nevertheless, a search has been executed for these claims. The search has been based on the alleged effects of the compounds/compositions.

SA 327450

INTERNATIONAL SEARCH REPORT
Information on patent family members

02/07/01

International application No.

PCT/DK 01/00113

Patent document cited in search report			Publication date	Patent family member(s)		Publication date
WO	9927944	A1	10/06/99	AU	4087999 A	06/12/99
				BG	104562 A	31/01/01
				BR	9815357 A	24/10/00
				CN	1281366 T	24/01/01
				DE	1033996 T	07/06/01
				EP	1033996 A	13/09/00
				EP	1079701 A	07/03/01
				HR	20000443 A	31/10/00
				NO	20002784 A	31/07/00
				WO	9959427 A	25/11/99
				AU	1706199 A	16/06/99
WO	9523166	A1	31/08/95	AU	699757 B	17/12/98
				AU	1748695 A	11/09/95
				AU	PM411994 D	00/00/00
				CA	2183977 A	31/08/95
				EP	0751960 A	08/01/97
				JP	9509182 T	16/09/97
				ZA	9501591 A	08/12/95
WO	9505849	A1	02/03/95	AT	162723 T	15/02/98
				AU	707083 B	01/07/99
				AU	7009198 A	30/07/98
				AU	7608094 A	21/03/95
				CA	2170236 A	02/03/95
				DE	69408342 D, T	14/05/98
				DK	96493 D	00/00/00
				DK	752886 T	04/05/98
				EP	0752886 A, B	15/01/97
				ES	2112559 T	01/04/98
				GR	3026419 T	30/06/98
				JP	9505031 T	20/05/97